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☐ 1. Document ID: US 6678703 B2

L19: Entry 1 of 7

File: USPT

Jan 13, 2004

US-PAT-NO: 6678703

DOCUMENT-IDENTIFIER: US 6678703 B2

TITLE: Medical image management system and method

DATE-ISSUED: January 13, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Rothschild; Peter Alden	Redwood City	CA		
Prasad; Vijendra Guru Raaj	Fremont	CA		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Radvault, Inc.	Hayward	CA			02

APPL-NO: 09/ 771446 [PALM]

DATE FILED: January 25, 2001

PARENT-CASE:

This application is a continuation-in-part of 09/602,643 filed Jun. 22, 2000.

INT-CL: [07] G06 F 17/30

US-CL-ISSUED: 707/201; 707/2, 707/3, 707/10, 707/104, 382/132, 705/3

US-CL-CURRENT: 707/201; 382/132, 705/3, 707/10, 707/104.1, 707/2, 707/3

FIELD-OF-SEARCH: 707/3, 707/2, 707/10, 707/101, 707/102, 707/104, 707/201, 709/229, 705/2, 705/37, 705/3, 382/128, 382/132

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<u>4847694</u>	July 1989	Nishihara	
<u>4958283</u>	September 1990	Tawara et al.	
<u>4993025</u>	February 1991	Vesel et al.	
<u>5124789</u>	June 1992	Hiyama et al.	
<u>5140518</u>	August 1992	Ena	
<u>5231572</u>	July 1993	Shigyo et al.	
<u>5235510</u>	August 1993	Yamada et al.	

<u>5321520</u>	June 1994	Inga et al.	
<u>5374965</u>	December 1994	Kanno	
<u>5384643</u>	January 1995	Inga et al.	
<u>5416602</u>	May 1995	Inga et al.	
<u>5469353</u>	November 1995	Pinsky et al.	
<u>5502576</u>	March 1996	Ramsay et al.	
<u>5502726</u>	March 1996	Fischer	
<u>5513101</u>	April 1996	Pinsky et al.	
<u>5586262</u>	December 1996	Komatsu et al.	
<u>5654555</u>	August 1997	Butaert et al.	
<u>5655084</u>	August 1997	Pinksy et al.	
<u>5668998</u>	September 1997	Mason et al.	
<u>5671353</u>	September 1997	Tian et al.	
<u>5715823</u>	February 1998	Wood et al.	
<u>5734915</u>	March 1998	Roewer	
<u>5740428</u>	April 1998	Mortimore et al.	
<u>5793969</u>	August 1998	Kamentsky	
<u>5851186</u>	December 1998	Wood et al.	
<u>5857030</u>	January 1999	Goborski et al.	
<u>5897498</u>	April 1999	Canfield, II et al.	
<u>5949491</u>	September 1999	Callahan et al.	
<u>5950207</u>	September 1999	Mortmore et al.	
<u>5959678</u>	September 1999	Callahan et al.	
<u>6006191</u>	December 1999	DiRienzo	705/2
<u>6047081</u>	April 2000	Groezinger et al.	
<u>6101407</u>	August 2000	Groezinger	
<u>6115486</u>	September 2000	Cantoni	
<u>6117079</u>	September 2000	Brackett et al.	
<u>6128655</u>	October 2000	Fields et al.	709/219
<u>6137527</u>	October 2000	Abdel-Malek et al.	
<u>6159150</u>	December 2000	Yale et al.	
<u>6171244</u>	January 2001	Finger et al.	
<u>6178225</u>	January 2001	Zur et al.	
<u>6192407</u>	February 2001	Smith et al.	709/229
<u>6210327</u>	April 2001	Brackett et al.	
<u>6487599</u>	November 2002	Smith et al.	709/229
<u>2001/0032263</u>	October 2001	Gopal et al.	709/227

FOREIGN PATENT DOCUMENTS

FOREIGN-PAT-NO	PUBN-DATE	COUNTRY	US-CL
WO 99 18502	April 1999	WO	
WO 00 33157	June 2000	WO	
WO 00 33231	June 2000	WO	

OTHER PUBLICATIONS

Patent Abstracts of Japan vol. 2000, No. 01, Jan. 31, 2000 & JP 11 284974 A (Fuji Photo Film Co. Ltd.), Oct. 15, 1999 abstract.

Patent Abstracts of Japan vol. 2000, No. 01, Jan. 31, 2000 & JP 11 284682 A (Fuji Photo Film

Co. Ltd.), Oct. 15, 1999 abstract.

ART-UNIT: 2172

PRIMARY-EXAMINER: Corriellus; Jean M.

ATTY-AGENT-FIRM: Schmitt; Susan M.

ABSTRACT:

The present invention provides a medical image management system and method that uses a central data management system to centrally manage the storage and transmission of electronic records containing medical images between remotely located facilities. A polling system is provided with remotely located workstations or local workstations so that the remote or local workstations may request queued data to be delivered that is awaiting delivery in the central database management system. The remotely located workstation or local image workstation communicates with a remotely located central data management system via a remote interface over the internet. The central database management system maintains and update any changes in the IP address of a remote or local workstation, in a look up table. The central data management system may also, in addition, push data when received to the last known IP address in the look up table.

34 Claims, 13 Drawing figures

Full	Title	Citation	Front	Review	Classification	Date	Reference	Abstract	Claims	KWC	Draw Desc	Image
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☐ 2. Document ID: US 6574742 B1

L19: Entry 2 of 7

File: USPT

Jun 3, 2003

US-PAT-NO: 6574742

DOCUMENT-IDENTIFIER: US 6574742 B1

TITLE: Method for storing and accessing digital medical images

DATE-ISSUED: June 3, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Jamroga; David	Stamford	CT		
Friswell; Richard J.	Somerville	MA		
Cook; David S.	Woodbridge	CT		
Patenaude; Michael K.	Wallingford	CT		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
InSite One, LLC	Wallingford	CT			02

APPL-NO: 09/ 711052 [PALM]

DATE FILED: November 10, 2000

PARENT-CASE:

This application claims the benefit of provisional application 60/164,998 filed Nov. 12, 1999.

INT-CL: [07] G06 F 1/12

US-CL-ISSUED: 713/400; 711/161, 705/2
 US-CL-CURRENT: 713/400; 705/2, 711/161

FIELD-OF-SEARCH: 705/2, 705/3, 711/100, 711/117, 711/147, 711/161, 711/167, 707/500, 707/204, 707/513, 707/103, 707/514, 713/400

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<u>5301105</u>	April 1994	Cummings	
<u>5321520</u>	June 1994	Inga et al.	
<u>5790668</u>	August 1998	Tomko	
<u>5831612</u>	November 1998	Stoval, III et al.	
<u>5857967</u>	January 1999	Frid et al.	
<u>5876926</u>	March 1999	Beecham	
<u>5950632</u>	September 1999	Reber et al.	
<u>6006191</u>	December 1999	DiRienzo	
<u>6049821</u>	April 2000	Theriault et al.	709/203
<u>6205481</u>	March 2001	Heddaya et al.	709/226
<u>6260021</u>	July 2001	Wong et al.	705/2
<u>6349373</u>	February 2002	Sitka et al.	711/161

OTHER PUBLICATIONS

Wong, et al. A Hospital Integrated Framework for Multimodality Image Base Management, Systems, Man and Cybernetics, Part A, IEEE Transactions, vol. 26, Issue 4, Jul. 1996, pp. 455-469.*
 Authentication of Digital Medical Images with Digital Signature Technology by Justin P. Smith, Mar. 1995, Computer Applications--pp. 771-774.

ART-UNIT: 3627

PRIMARY-EXAMINER: Chilcot; Richard

ASSISTANT-EXAMINER: Harle; J

ATTY-AGENT-FIRM: St. Onge Steward Johnston & Reens LLC

ABSTRACT:

A system for communication, storage, retrieval and delivery of information between the system and participating institutions and sites includes institution, warehouse and central servers sequentially receiving data from the participating institutions. The institution server is provided with an index stored in the institution server and constantly updated upon receiving new information. The central server has a long-term storage accessible from the warehouse server to provide the requested information to the participating institutions if this information is not found on either of the institution or warehouse servers.

65 Claims, 11 Drawing figures

Full	Title	Citation	Front	Review	Classification	Date	Reference	Claims	KWIC	Draw Desc	Image
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☐ 3. Document ID: US 6501849 B1

Record List Display

Page 5 of 12

L19: Entry 3 of 7

File: USPT

Dec 31, 2002

US-PAT-NO: 6501849

DOCUMENT-IDENTIFIER: US 6501849 B1

TITLE: System and method for performing image-based diagnosis over a network

DATE-ISSUED: December 31, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Gupta; Rajiv	New York	NY		
Daily; Christopher James	Ogden	UT		
Shah; Rasiklal Punjalal	Latham	NY		
Afonso; Valtino Xavier	DesPlaines	IL		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
General Electric Company	Schenectady	NY			02

APPL-NO: 09/ 474499 [PALM]

DATE FILED: December 29, 1999

PARENT-CASE:

CROSS REFERENCE TO RELATED APPLICATIONS This application is a continuation-in-part (CIP) of U.S. patent application Ser. No. 08/921,959 entitled "System And Method For Performing Image-Based Diagnosis" filed on Sep. 2, 1997 now U.S. Pat. No. 6,115,489.

INT-CL: [07] G06 K 9/00

US-CL-ISSUED: 382/141; 382/152, 382/157

US-CL-CURRENT: 382/141; 382/152, 382/157

FIELD-OF-SEARCH: 382/152, 382/157, 382/141, 348/86, 348/87, 348/130, 348/125, 348/126, 364/474.21, 364/474.34, 702/34, 702/35, 701/29, 701/30

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<u>5838816</u>	November 1998	Holmberg	382/157
<u>5926558</u>	July 1999	Zelt, III et al.	382/152
<u>6062631</u>	April 2000	Busch et al.	701/29
<u>6115489</u>	September 2000	Gupta et al.	382/141

ART-UNIT: 2723

PRIMARY-EXAMINER: Mancuso; Joseph

ASSISTANT-EXAMINER: Bali; Vikkram

ATTY-AGENT-FIRM: Foley & Lardner Vogel; Peter J. Della Penna; Michael A.

ABSTRACT:

A system for performing image-based diagnosis of a machine includes a database containing a plurality of historical images taken from a plurality of machines, a diagnostic unit configured to diagnose a new artifact image from the machine and to communicate historical and non-historical images or data associated with the system to a remote facility. The plurality of historical images include a plurality of ideal images generated from the plurality of machines using all possible machine settings and a plurality of artifact images generated from the plurality of machines, each of the artifact images having known faults associated therewith and a corresponding corrective action for repairing the faults. The diagnostic unit includes a diagnostic image processor and a diagnostic fault isolator. The diagnostic image processor includes means for finding an ideal image from the plurality of historical images that most closely matches the new artifact image, means for assigning an artifact category to the new artifact image based on the matched ideal image, and means for extracting an artifact feature from the new artifact image according to the assigned category. The diagnostic fault isolator includes means for generating a plurality of metrics for the extracted artifact feature and means for applying the plurality of metrics to identify an artifact image from the plurality of historical images that most closely matches the new artifact image and a corrective action for repairing the unknown fault.

21 Claims, 9 Drawing figures

Full	Title	Citation	Front	Review	Classification	Date	Reference	Abstract	Claims	Keywords	Draw Desc	Image
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☐ 4. Document ID: US 6006191 A

L19: Entry 4 of 7

File: USPT

Dec 21, 1999

US-PAT-NO: 6006191

DOCUMENT-IDENTIFIER: US 6006191 A

TITLE: Remote access medical image exchange system and methods of operation therefor

DATE-ISSUED: December 21, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
DiRienzo; Andrew L.	Elizaville	NY	12523	

APPL-NO: 08/ 854474 [PALM]

DATE FILED: May 12, 1997

PARENT-CASE:

This application claims benefit of Provisional Application No. 60/017316 filed May 13, 1996.

INT-CL: [06] G06 F 17/60

US-CL-ISSUED: 705/2; 705/37

US-CL-CURRENT: 705/2; 705/37

FIELD-OF-SEARCH: 705/37, 705/2, 705/3

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<u>3573747</u>	April 1971	Adams et al.	
<u>4153931</u>	May 1979	Green et al.	364/200
<u>4677552</u>	June 1987	Sibley, Jr.	364/408
<u>4903201</u>	February 1990	Wagner	364/200
<u>5038284</u>	August 1991	Kramer	364/408
<u>5063507</u>	November 1991	Lindsey et al.	364/408
<u>5168446</u>	December 1992	Wiseman	364/408
<u>5297032</u>	March 1994	Trojan et al.	364/408
<u>5321520</u>	June 1994	Inga et al.	358/403
<u>5469353</u>	November 1995	Pinsky et al.	364/413.01
<u>5513101</u>	April 1996	Pinsky et al.	705/2
<u>5655084</u>	August 1997	Pinsky et al.	705/2
<u>5664115</u>	September 1997	Fraser	705/37
<u>5715402</u>	February 1998	Popolo	705/37
<u>5715823</u>	February 1998	Wood et al.	705/2
<u>5832221</u>	November 1998	Jones	375/200.36
<u>5835896</u>	November 1998	Fisher et al.	705/37
<u>5890138</u>	March 1999	Godin et al.	705/37
<u>5905975</u>	May 1999	Ausubel	705/37
<u>5918208</u>	June 1999	Javitt	705/2
<u>5924082</u>	July 1999	Silverman et al.	705/37

OTHER PUBLICATIONS

Baxter, Kirkman G. et al. "Wide Area Networks for Teleradiology." Journal of Digital Imaging, vol. 4, No. 1, Feb., 1991, pp. 51-59.

Seshadri, Sridhar B. et al. "Design of a Medical Image Management System: a Practical Cost-effective Approach." Computer Methods and Programs in Biomedicine, vol. 25, 1987, pp. 185-192.

Rosenquist, C. John, MD. "Queueing Analysis: a Useful Planning and Management Technique for Radiology." Journal of Medical Systems, vol. 11, No. 6, 1987, pp. 413-419.

Glover, John L. "Medicine in the Nineties Expectations, Priorities, and Realities." Archives of Surgery, p. 766, Jul. 1992.

Heshmat, Shahram. "A decision model for competitive bidding." Journal of Health Care Finance, v. 22, No. 4, pp. 81-87, 1996.

Rosenberg, Ronald. "A report on New England's growing companies: healing by wire." Boston Globe, s. 1, p. 52, Jul. 1994.

ART-UNIT: 275

PRIMARY-EXAMINER: MacDonald; Allen R.

ASSISTANT-EXAMINER: Crecca; Michele Stuckey

ATTY-AGENT-FIRM: Westerlund .cndot. Powell, P.C. Powell, Jr.; Raymond H. J. Westerlund; Robert A.

ABSTRACT:

A system for transmitting, storing, retransmitting and receiving a plurality of electronic medical images, which permits diagnostic readings by physicians during irregularly occurring periods of down time, where each of the electronic medical images contains an indicia, e.g., bid price, of the priority attached to it by a patient, includes first through fourth computer systems. The first computer system includes an associated scanning device for generating the electronic medical images, the second computer system includes an electronic medical image storage memory for storing the electronic medical images in a predetermined order based on the

indicia in the respective electronic medical images, the third computer system includes a first display for displaying the selected one of the electronic medical images, and the fourth computer system includes a second display for monitoring all of the electronic medical images, and an input device for changing one of the indicia in a respective one of the electronic medical images thereby changing the predetermined order. The second and third computer systems are connected by both a low speed communications channel for instructing the second computer system to download the selected one of the electronic medical images to the third computer system, and a high speed communications channel for downloading the selected one of the electronic medical images from the second computer system to the third computer system. Methods of operating this system are also described.

50 Claims, 7 Drawing figures

Full	Title	Citation	Front	Review	Classification	Date	Reference	Image	Claims	KWIC	Draw Desc	Image
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☐ 5. Document ID: US 5950207 A

L19: Entry 5 of 7

File: USPT

Sep 7, 1999

US-PAT-NO: 5950207

DOCUMENT-IDENTIFIER: US 5950207 A

TITLE: Computer based multimedia medical database management system and user interface

DATE-ISSUED: September 7, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Mortimore; William C.	Muskego	WI		
Simon; Dwight A.	Dousman	WI		
Gray; Michael J.	Novato	CA		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Merge Technologies Inc.	Milwaukee	IL			02

APPL-NO: 08/ 908901 [PALM]

DATE FILED: August 8, 1997

PARENT-CASE:

This is a continuation of U.S. Ser. No. 08/384,943 filed on Feb. 7, 1995 U.S. Pat. No. 5,740,428.

INT-CL: [06] G06 F 17/30

US-CL-ISSUED: 707/104; 707/100

US-CL-CURRENT: 707/104.1; 707/100

FIELD-OF-SEARCH: 707/104, 707/100

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO

ISSUE-DATE

PATENTEE-NAME

US-CL

<u>4656579</u>	April 1987	Bachman et al.	364/200
<u>4994987</u>	February 1991	Balwin	364/518
<u>5019975</u>	May 1991	Mukai	364/413.13
<u>5085185</u>	February 1992	Morris et al.	123/193.6
<u>5229585</u>	July 1993	Lemberger et al.	235/375
<u>5241472</u>	August 1993	Gur et al.	364/413.22
<u>5258855</u>	November 1993	Lech et al.	358/462
<u>5264684</u>	November 1993	Weil	235/375
<u>5272543</u>	December 1993	Yanagisawa	358/403
<u>5321520</u>	June 1994	Inga et al.	358/403
<u>5359702</u>	October 1994	Mukai	395/109
<u>5369508</u>	November 1994	Lech et al.	358/462
<u>5384643</u>	January 1995	Inga et al.	308/403
<u>5416602</u>	May 1995	Inga et al.	358/403
<u>5418355</u>	May 1995	Weil	235/375
<u>5448375</u>	September 1995	Cooper et al.	358/375
<u>5486686</u>	January 1996	Zdybel et al.	235/375
<u>5544284</u>	August 1996	Alleback et al.	395/131
<u>5592374</u>	January 1997	Fellegara et al.	395/203
<u>5740428</u>	April 1998	Mortimore et al.	707/104

ART-UNIT: 276

PRIMARY-EXAMINER: Kulik; Paul V.

ASSISTANT-EXAMINER: Corrielus; Jean M.

ATTY-AGENT-FIRM: Lechter; Michael A. Phillips; James H. Squire, Sanders & Dempsey L.L.P.

ABSTRACT:

A computer database for medical imaging stores and manipulates multimedia data from various sources and reduces misidentification of data. A unique identifier is generated and linked to each data object, preferably at the time the image is generated. A graphical representation of the identifier is incorporated into the image or text when displayed or printed. A detector may be used to read the representation, allowing the identifier to be read and identify the data.

74 Claims, 9 Drawing figures

Full	Title	Citation	Front	Review	Classification	Date	Reference	Abstract	Attachment	Claims	RWD	Draw Desc	Image
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☐ 6. Document ID: US 5911687 A

L19: Entry 6 of 7

File: USPT

Jun 15, 1999

US-PAT-NO: 5911687

DOCUMENT-IDENTIFIER: US 5911687 A

TITLE: Wide area medical information system and method using thereof

DATE-ISSUED: June 15, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Sato; Shinichi	Yamato			JP
Sano; Koichi	Yokohama			JP

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Hitachi, Ltd.	Tokyo			JP	03

APPL-NO: 08/ 747681 [PALM]
DATE FILED: November 12, 1996

FOREIGN-APPL-PRIORITY-DATA:

COUNTRY	APPL-NO	APPL-DATE
JP	7-296477	November 15, 1995

INT-CL: [06] A61 B 5/00

US-CL-ISSUED: 600/300
US-CL-CURRENT: 600/300

FIELD-OF-SEARCH: 600/300, 600/301, 128/903, 128/904, 705/2, 705/3

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<u>5553609</u>	September 1996	Chen et al.	600/301
<u>5619991</u>	April 1997	Sloane	600/300

FOREIGN PATENT DOCUMENTS

FOREIGN-PAT-NO	PUBN-DATE	COUNTRY	US-CL
2-218336	August 1990	JP	
3-198832	August 1991	JP	
4-15035	January 1992	JP	

ART-UNIT: 376

PRIMARY-EXAMINER: O'Connor; Cary E.

ASSISTANT-EXAMINER: Winakur; Eric F.

ATTY-AGENT-FIRM: Antonelli, Terry, Stout & Kraus, LLP

ABSTRACT:

The present invention is a wide area medical information system and a method using thereof comprising a wide area network, a plurality of doctor terminals and patient terminals connected to the wide area network, and a management server including at least an electronic case record file storing clinic information for patient's and a doctor database storing data of a plurality of doctors, wherein the system searches the doctor database on the basis of patient information including the condition of the disease of a certain patient input from the patient terminal,

selects the corresponding doctor, requests that the selected doctor take charge of examination and treatment for the aforementioned certain patient, registers the correspondence between the approved doctor and the aforementioned certain patient in the electronic case record file, gives the right to access the clinic information of the patient to the approved doctor, and executes the online examination and treatment via the doctor terminal and patient terminal, so that a patient existing in a wide area can receive remote examination and treatment services of high satisfaction and medical treatment related services other than examination and treatment without depending on the location.

5 Claims, 22 Drawing figures

Full	Title	Citation	Front	Review	Classification	Date	Reference	Suppl. Desc.	Abstract	Claims	KWC	Draw Desc	Image
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☐ 7. Document ID: US 5740428 A

L19: Entry 7 of 7

File: USPT

Apr 14, 1998

US-PAT-NO: 5740428

DOCUMENT-IDENTIFIER: US 5740428 A

TITLE: Computer based multimedia medical database management system and user interface

DATE-ISSUED: April 14, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Mortimore; William C.	Muskego	WI		
Simon; Dwight A.	Dousman	WI		
Gray; Michael J.	Novato	CA		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Merge Technologies, Inc.	Milwaukee	WI			02

APPL-NO: 08/ 384943 [PALM]

DATE FILED: February 7, 1995

INT-CL: [06] G06 F 17/30

US-CL-ISSUED: 395/615; 395/611, 364/900

US-CL-CURRENT: 707/104.1; 700/90, 707/100

FIELD-OF-SEARCH: 395/600, 395/615, 395/611, 364/13, 364/200, 364/413

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
4656579	April 1987	Bachman et al.	364/200
4994987	February 1991	Balwin	364/518
5019975	May 1991	Mukai	364/413.13
5085185	February 1992	Morris et al.	123/193.6
5229585	July 1993	Lemberger et al.	235/375

<u>5241472</u>	August 1993	Gur et al.	364/413.22
<u>5258855</u>	November 1993	Lech et al.	358/462
<u>5264684</u>	November 1993	Weil	235/375
<u>5272543</u>	December 1993	Yanagisawa	358/403
<u>5321520</u>	June 1994	Inga et al.	358/403
<u>5334851</u>	August 1994	Good et al.	250/582
<u>5359702</u>	October 1994	Mukai	395/109
<u>5369508</u>	November 1994	Lech et al.	358/462
<u>5384643</u>	January 1995	Inga et al.	308/403
<u>5416602</u>	May 1995	Inga et al.	358/403
<u>5418355</u>	May 1995	Weil	235/375
<u>5448375</u>	September 1995	Cooper et al.	358/403
<u>5486686</u>	January 1996	Zdybel, Jr. et al.	235/375
<u>5544284</u>	August 1996	Alleback et al.	395/131
<u>5592374</u>	January 1997	Fellegara et al.	395/203

ART-UNIT: 237

PRIMARY-EXAMINER: Black; Thomas G.

ASSISTANT-EXAMINER: Corriellus; Jean M.

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ABSTRACT:

A computer database for medical imaging stores and manipulates multimedia data from various sources and reduces misidentification of data. A unique identifier is generated and linked to each data object, preferably at the time the image is generated. A graphical representation of the identifier is incorporated into the image or text when displayed or printed. A detector may be used to read the representation, allowing the identifier to be read and identify the data.

29 Claims, 9 Drawing figures

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sub-Process	Attachment	Claims	WMO	Draw Desc	Image
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L19: Entry 4 of 7

File: USPT

Dec 21, 1999

DOCUMENT-IDENTIFIER: US 6006191 A

TITLE: Remote access medical image exchange system and methods of operation therefor

Brief Summary Text (40):

(2) Local diagnostic providers may not be adequate for the patient's medical needs either for want of competency in a particular area or due to staffing problems, i.e., a competent diagnostic physician is not available when needed. This could result in poor health care and possibly disastrous results for the patient and, legally, for the medical facility.

Brief Summary Text (50):

(12) A medical facility has to be staffed based on anticipated peak work loads, which often means that the inevitable fluctuations in patient flow cause either the diagnostic staff to be over loaded or underutilized. Moreover, these fluctuations are unpredictable and often of short duration.

Brief Summary Text (93):

These and other objects, features and advantages according to the present invention are provided by a remote access medical image exchange system including a first facility for converting a plurality of physical medical images into corresponding digital medical images and for storing the digital medical images in a remotely accessible data storage device, to thereby provide a remotely accessible electronic digital medical image database comprised of the stored digital medical images, and a second facility remote from the first facility, but in electronic communication therewith, for providing a diagnostic service provider with access to the electronic digital medical image database, wherein the system is configured in such a manner as to enable the diagnostic service provider to select one or more of the digital medical images from the database for reading, at the discretion of the diagnostic service provider.

Brief Summary Text (94):

These and other objects, features and advantages according to the present invention are provided by a remote access medical image exchange system, including a first facility for converting a plurality of physical medical images for respective patients into corresponding digital medical images and for storing the digital medical images in a remotely accessible data storage device, to thereby provide a remotely accessible electronic digital medical image database comprised of the stored digital medical images, and a plurality of second facilities remote from the first facility, but in electronic communication therewith, for providing a pool of participating diagnostic service providers with access to the electronic digital medical image database, wherein the system is configured in such a manner as to enable any one or more of the diagnostic service providers to select one or more of the digital medical images from the database for reading, in accordance with selection criteria established by the diagnostic service providers and the patients.

Brief Summary Text (95):

According to one aspect of the present invention, the system also includes a device for facilitating interactive bidding by the patients and diagnostic service providers regarding the fees to be charged by the participating diagnostic service providers for the reading of one or more of the digital medical images from the database, whereby the system functions as an open electronic marketplace for the reading of digital medical images.

Brief Summary Text (98):

storing the digital medical images in a remotely accessible data storage device, to thereby provide a remotely accessible electronic digital medical image database comprised of the stored digital medical images;

Brief Summary Text (99):

providing a pool of participating diagnostic service providers with access to the electronic digital medical image database; and

Brief Summary Text (100):

wherein any one or more of the diagnostic service providers can select one or more of the digital medical images from the database for reading, in accordance with selection criteria established by the diagnostic service providers and the patients.

Brief Summary Text (101):

These and other objects, features and advantages according to the present invention are provided by a remote access medical image exchange system, including a first facility for converting a plurality of physical medical images into corresponding digital medical images and for storing the digital medical images in a remotely accessible data storage device, to thereby provide a remotely accessible electronic digital medical image database comprised of the stored digital medical images, and a second facility remote from the first facility, but in electronic communication therewith, for providing a diagnostic service provider with access to the electronic digital medical image database. Preferably, the system is configured in such a manner as to enable the diagnostic service provider to arbitrarily select one or more of the digital medical images from the database for reading, at the discretion of the diagnostic service provider.

Brief Summary Text (102):

These and other objects, features and advantages according to the present invention are provided by a remote access medical image exchange system, including a first facility for converting a plurality of physical medical images for respective patients into corresponding digital medical images and for storing the digital medical images in a remotely accessible data storage device, to thereby provide a remotely accessible electronic digital medical image database comprised of the stored digital medical images, and a plurality of second facilities remote from the first facility, but in electronic communication therewith, for providing a pool of participating diagnostic service providers with access to the electronic digital medical image database. According to one aspect of the present invention, the system is configured in such a manner as to enable any one or more of the diagnostic service providers to select one or more of the digital medical images from the database for reading, in accordance with selection criteria established by the diagnostic service providers and the patients.

Brief Summary Text (105):

storing the digital medical images in a remotely accessible data storage device, to thereby provide a remotely accessible electronic digital medical image database comprised of the stored digital medical images; and

Brief Summary Text (106):

providing a pool of participating diagnostic service providers with access to the electronic digital medical image database.

Brief Summary Text (107):

According to one aspect of the present invention, any one or more of the diagnostic service providers can select one or more of the digital medical images from the database for reading, in accordance with selection criteria established by the diagnostic service providers and the patients.

Detailed Description Text (5):

Advantageously, the RAMIX operating method according to the present invention starts by having digitized patient images sent to a Clearinghouse Computer (CHC). It will be appreciated that the CHC (200) advantageously can be a mainframe computer or a dedicated server. The image is then placed in one of two separate and different markets areas, so-called Patient Bid Queues (PBQs) and Provider Mail Boxes (PMBs). Preferably, the choice between PBQ and PMB is controlled solely by the patient/gatekeeper physician. Diagnostic physicians advantageously can access both the PBQ and PMB and examine the contents of each before deciding if they want to do a reading. If they do, the diagnostic physician downloads the image(s) and begins the diagnosis. Advantageously, the patient/gatekeeper and the diagnostic physician preferably decide which diagnostic physician is going to do the reading and how much the diagnostic physician is paid for this reading. The RAMIX system acts only as a forum which allows transactions or

interactions between the patient/gatekeeper and the diagnostic physician to occur.

Detailed Description Text (12):

(4) The RAMIX system according to the present invention provides a specialized bid mechanism, which is based on ordered sets of queues for individual bid amounts. The system and corresponding operation method allow patients to barter with the entire diagnostic physician community as a whole while, at the same time, providing diagnostic physicians the means to survey the entire pool (database) of images that require reading at any given moment.

Detailed Description Text (25):

Referring first to FIG. 3, the RAMIX system 100 according to the present invention includes a clearing house computer (CHC) 200, which advantageously receives, stores and downloads medical images requiring diagnostic readings and receives, stores and transmits reports regarding diagnostic readings performed on medical images. Preferably, the CHC 200 is a distributed computer network with redundant transmission and storage capabilities; the CHC 200 advantageously can be a server in a large scale intranet. Other hardware configurations are possible so long as the functions described below can all be performed.

CLAIMS:

25. A remote access medical image exchange system, comprising:

a first facility for converting a plurality of physical medical images for respective patients into corresponding digital medical images and for storing the digital medical images in a remotely accessible data storage device, to thereby provide a remotely accessible electronic digital medical image database comprised of the stored digital medical images;

a plurality of second facilities remote from the first facility, but in electronic communication therewith, for providing a pool of participating diagnostic service providers with access to the electronic digital medical image database; and,

wherein the system is configured in such a manner as to enable any one or more of the diagnostic service providers to select one or more of the digital medical images from the database for reading, in accordance with selection criteria established by one of the diagnostic service providers and the patients.

29. The system as set forth in claim 25, wherein the system is configured in such a manner as to enable any one or more of the diagnostic service providers to select one or more of the digital medical images from the database for reading at any time which they choose.

31. The system as set forth in claim 25, further comprising means for facilitating interactive bidding by the patients and diagnostic service providers regarding the fees to be charged by the participating diagnostic service providers for the reading of one or more of the digital medical images from the database, whereby the system functions as an open electronic marketplace for the reading of digital medical images.

38. A method for facilitating remote reading of medical images, including the steps of:

converting a plurality of physical medical images for respective patients into corresponding digital medical images;

storing the digital medical images in a remotely accessible data storage device, to thereby provide a remotely accessible electronic digital medical image database comprised of the stored digital medical images;

providing a pool of participating diagnostic service providers with access to the electronic digital medical image database; and

wherein any one or more of the diagnostic service providers can select one or more of the digital medical images from the database for reading, in accordance with selection criteria established by the diagnostic service providers and the patients.

39. The method as set forth in claim 38, wherein any one or more of the diagnostic service

providers can select one or more of the digital medical images from the database for reading any time which they choose.

40. The method as set forth in claim 38, wherein any one or more of the diagnostic service providers selects one or more of the digital medical images from the database during their normal downtime.

41. The method as set forth in claim 38, further including the step of the participating diagnostic service providers competitively bidding for the right to read one or more of the digital medical images from the database.

42. The method as set forth in claim 38, further including the step of the participating diagnostic service providers and the patients engaging in an interactive bidding process regarding the fees to be charged by the participating diagnostic service providers for the reading of one or more of the digital medical images from the database.

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L19: Entry 6 of 7

File: USPT

Jun 15, 1999

DOCUMENT-IDENTIFIER: US 5911687 A

TITLE: Wide area medical information system and method using thereof

Abstract Text (1):

The present invention is a wide area medical information system and a method using thereof comprising a wide area network, a plurality of doctor terminals and patient terminals connected to the wide area network, and a management server including at least an electronic case record file storing clinic information for patient's and a doctor database storing data of a plurality of doctors, wherein the system searches the doctor database on the basis of patient information including the condition of the disease of a certain patient input from the patient terminal, selects the corresponding doctor, requests that the selected doctor take charge of examination and treatment for the aforementioned certain patient, registers the correspondence between the approved doctor and the aforementioned certain patient in the electronic case record file, gives the right to access the clinic information of the patient to the approved doctor, and executes the online examination and treatment via the doctor terminal and patient terminal, so that a patient existing in a wide area can receive remote examination and treatment services of high satisfaction and medical treatment related services other than examination and treatment without depending on the location.

Brief Summary Text (3):

The present invention relates to a wide area medical information system and a method for use thereof by which a patient can receive examination and treatment without going to a doctor at a remote location and more particularly to a wide area medical information system and a method for use thereof by which a patient at any location in the country can receive a remote examination and treatment service from a doctor selected optionally by the patient or can receive various related services from optional medical facilities.

Brief Summary Text (7):

Furthermore, remote examination and treatment services in which a plurality of medical facilities which are located far from each other are connected and information regarding patients including image information is sent and received has been tried experimentally. A medical image transmission system having an image transmission means and reception means for that purpose is disclosed in Japanese Laid-Open Patent Application No. 2-218336 (Prior art 3).

Brief Summary Text (13):

To accomplish this object, the present invention is a wide area medical information system and a method for use thereof comprising a wide area network, a plurality of doctor terminals connected to the wide area network, a plurality of patient terminals connected to the wide area network, and at least one management server connected to the wide area network including an electronic case record file for storing at least clinic information for patients and a doctor database for storing data regarding a plurality doctors registered in the wide area medical information system, wherein the system searches the doctor database on the basis of basic patient information including at least the name of a certain patient input from the patient terminal and patient information including the condition of the patient, selects the corresponding doctor, requests that the selected doctor take charge of examination and treatment for the aforementioned certain patient, registers the correspondence between the approved doctor and the aforementioned certain patient in the electronic case record file, gives the right to access the clinic information regarding the patient for whom the correspondence is registered to the approved doctor, and executes the online examination and treatment including at least queries for diagnosis via the doctor terminal and patient terminal of the doctor and patient in the aforementioned registered correspondence.

Brief Summary Text (17):

(3) medical facilities other than the clinic designated by the patient individually, for example, various inspection, treatment, and surgical operation facilities are decided as elements of the wide area network and when the clinic examines the patient, it gives various orders to the facilities online;

Brief Summary Text (19):

(5) a management group for managing the whole information processes executed between a patient and a medical facility or between a plurality of medical facilities is installed and centrally manages medical information of each patient generated in a plurality of medical facilities.

Brief Summary Text (20):

According to (1) mentioned above, a patient can select and register a plurality of doctors whose examination and treatment are desired simultaneously, so that he can receive examination and treatment services independent of his/her location relative to the location of the doctor and/or medical facilities.

Brief Summary Text (23):

According to (3), even when a physical inspection or treatment is necessary for a patient, he can receive such measure instructed by a doctor in the clinic in a medical facility designated by him in the same way as with (2).

Brief Summary Text (25):

According to (5), treatment history data of a patient generated in a plurality of medical facilities is integrated and centrally managed, so that superior examination and treatment in terms of consistency and reliability are made possible. For example, side effects caused by taking medicines given from different hospitals and duplicated inspection, which are conventional problems, can be checked. Even when an incurable disease occurs, by searching for a case history database of another patient in the past, it is possible to find a similar case and confer it for examination and treatment.

Brief Summary Text (27):

As mentioned above, according to the present invention, not only the clinic but also a plurality of medical facilities designated by a patient are connected electronically to the patient and a virtual hospital is structured on the network. In this case, it functions for the patient as if it is a single hospital information system. Therefore, regardless of where a patient is located, he can receive medical services which are equivalent to those in a hospital in which he would be physically located.

Brief Summary Text (28):

According to the present invention, hereinafter, a hospital constructed virtually on a network by connecting a plurality of optional medical facilities electronically is referred to as "electronic hospital" in a sense of comparison with a hospital in which a patient exists physically.

Detailed Description Text (3):

FIG. 1 shows a constitution example of the electronic system of the present invention. This system is a hospital information system which is virtually constructed on a wide area network with a patient and a plurality of medical facilities being electronically connected. A patient can select an optional medical facility as an element. Via a wide area network 100, a patient side (terminal existing in the patient house or terminal carried by the patient) 101, a clinic 102 comprising a plurality of doctors working at arbitrary locations all over the country, the nearest pharmacy 103 to the patient's house, a health and medical information management center in a local area (hereinafter abbreviated to only management center) 104 for managing not only treatment history data of all residents in the area where a patient lives (for example, for each prefecture) but also health and medical information at the same time, a treatment station 105 for executing medical services such as examination and treatment for a patient in a city, town, or village where the patient lives, and a financial institution 106 where the deposit account of a patient exists are connected electronically to each other. The electronic hospital system structured by these elements on the network functions for the patient as if it is a single hospital information system. In this system, the clinic 102, the nearest pharmacy to the patient's house 103, the management center 104, the treatment station 105, and the financial institution 106 are similar to the clinic section subsystem, pharmacy subsystem, case record management room, various treatment systems, and accounting system in a conventional hospital

information system respectively.

Detailed Description Text (14):

FIG. 3 shows a constitution example of the doctor side 102 constituting the clinic. A file server 301, a reception terminal with TV-phone 302, an accounting terminal 303, a clinic (order) terminal 304, and a high resolution display for image display 305 are connected via a branch network 300 connected to the wide area network 100. The file server 301 has an accounting file 306 and a care record file 307 for storing treatment history information of patients under care who are examined via the network and the reception terminal with TV-phone has a list file for reserved patients under care 308. Each doctor of the clinic receives registration and appointments for examination and treatment from patient's via the reception terminal installed with TV-phone 302.

Detailed Description Text (15):

Basic information such as the patient ID, address, age, and sex for registration and the date of appointment of examination and treatment are registered in the list file for reserved patients under care 308. Prior to examination and treatment, the file server 301 loads down the treatment history data of a patient under care from the management center 104 and stores it in the care record for patients under care.

Detailed Description Text (16):

The clinic terminal 304 downloads the treatment history data of a patient from the file server 301 when necessary and displays it. The doctor advances examination and treatment by interaction with the patient via the TV-phone terminal 201 and by referring to the treatment history data.

Detailed Description Text (17):

The accounting terminal 303 calculates the treatment fee for the treatment content executed by the doctor for the patient and transfers the result to the accounting file 306 in the file server. The data sent to the accounting file 306 is saved by the end of month and used for demand for medical expense payment for the Ministry of Welfare.

Detailed Description Text (18):

FIG. 4 shows an example of the pharmacy side 103. A file server 401, an accounting terminal 402, and a check terminal 403 are connected via a branch network 400 connected to the wide area network 100. The file server 401 has an accounting file 404 and is connected to a printer for prescription and medicine pack output 405. The file server 401 receives the prescription order information sent from the clinic 102 and outputs a prescription corresponding to the order content via the printer 405. When the patient comes directly to the pharmacy 103 instead of an instruction of the doctor and attempts to purchase a medicine, the check terminal 403 has a function for conferring the medicine history data of the patient sent from the management center 104 and checks for side effects due to taking of the medicine.

Detailed Description Text (19):

FIG. 5 shows an example of the treatment station 105. An integrated management server of treatment station 501, a telephone installed reservation reception terminal 502, an accounting terminal 503, an inspecting subsystem 504, a radiograph photo-taking subsystem 505, an operating subsystem 506, a nursing system 507, and a ward subsystem 508 are connected via a branch network 500 connected to the wide area network 100.

Detailed Description Text (20):

The integrated management server 501 has an accounting file 509. The inspecting system 504 has an inspection result file 511. Furthermore, the radiograph photo-taking subsystem has an image file 512.

Detailed Description Text (21):

The integrated management server receives various order information sent from the clinic 102 and transfers order information to a corresponding subsystem. Each subsystem receiving order information executes a measure corresponding to the order content for the patient. For example, when the order content relates to biochemistry inspection, the order information is sent to the inspecting subsystem 504. In the inspecting subsystem, biochemistry inspection is executed for the patient and the result is stored in the inspection result file 511 and transferred to the management center 104.

Detailed Description Text (23):

FIG. 6 shows the constitution of the management center 104. The management center monitors the whole electronic hospital and integrates and manages treatment history data of residents in the corresponding local area generated in all medical facilities. An integrated management server of medical information in local area 601 and a plurality of telephone reservation reception terminals 602 are connected via a branch network 600 connected to the wide area network 100.

Detailed Description Text (24):

The integrated management server 601 has a case record file for patients 603 for integrating and managing treatment history information of residents in local area, an electronic hospital doctor database 604 for registering information such as name, place of registration, and special field of each doctor registered beforehand in correspondence with the electronic hospital, a doctor-patient correspondence file in the electronic hospital 605 registering the correspondence between the doctors registered in the electronic hospital and patients thereof, and a case database 606 registering important cases of past patients in the electronic hospital. The integrated management server 601 receives a request of registration in the electronic hospital and treatment appointment from a patient via the telephone installed reservation reception terminal 602, searches the electronic hospital doctor database 604, and introduces a doctor registered in the electronic hospital. When registration is realized between the doctor and the patient, the integrated management server 601 registers the correspondence in the doctor-patient correspondence file in the electronic hospital 605 and gives the right of accessing the treatment history information of the patient stored in the case record file for patients 603 to the doctor. When an incurable disease is diagnosed, the integrated management server 601 gives the right of accessing the case database 606 at the request of the doctor when necessary.

Detailed Description Text (29):

S703: The management center side 104 searches the electronic hospital doctor database 604 on the file server 601 from the reception terminal 602 and searches for a doctor in charge for each clinic section under the search condition of case history and desire of the patient. An example of the content of the database 604 is shown in FIG. 10 and it comprises information including the doctor's name, place of registration, section, specialty, history, and others.

Detailed Description Text (47):

S901: On the day before examination and treatment or in the morning of the day, the doctor side of the clinic 102 of the electronic hospital accesses the integrated management server 601 of the management center 104 and loads down the electronic case record data of the patient to be examined to the case record file for patients under care 307 on the file server 301 from the case record file for patients in local area 603 via the wide area network 100.

Detailed Description Text (49):

S903: The doctor side accessed by the patient side loads the case record data of the patient downloaded to the case record file for patients under care 307 on the file server 301 beforehand onto the clinic terminal 304 and displays it.

Detailed Description Text (56):

S911, S912, S913: On the pharmacy side 103 (generally the nearest pharmacy of the patient house) designated by the patient beforehand, the file server 401 receives the order content issued from the doctor side via the wide area network 100 and outputs the prescription necessary to prepare the ordered medicine and medicine packs for packing medicine to the printer for prescription output 405. Hereafter, the pharmacy performs the medicine preparation process corresponding to the prescription.

Detailed Description Text (60):

S1002: The clinic terminal 304 refers to the individual information of the input medicines. The clinic terminal 304 refers to the individual information of the medicine from the master file of medicines (medicine master) saved in the file server 301.

Detailed Description Text (65):

S10042: The clinic terminal 304 refers to the individual information of the corresponding input medicine and the individual information of one medicine in the stack of already ordered medicines from the medicine master of the file server 301.

Detailed Description Text (71):

By the aforementioned series of processes, the check for prescription order is executed. The medicine history information of previously ordered medicines to be conferred for checking in the series of processes is based on the case record data of patient managed by the management center 104 centralizedly and it includes information of medicines dosed for the same patient in all the medical facilities. Therefore, it is possible to check for side effects caused by taking medicines given from different medical facilities at the same time, which is a conventional problem. In the above example, it is assumed that the doctor side executes the prescription order check. However, when a patient purchases a medicine directly from the pharmacy 103, it is necessary that the pharmacy side executes the check. In this case, the pharmacy side 103 refers to the medicine information of the patient of the management center 104 and the check terminal 403 on the pharmacy side executes the same check process.

Detailed Description Text (73):

S1101: On the day before examination and treatment or in the morning of the day of treatment, the doctor side 102 accesses the integrated management server 601 of the management center 104 and downloads the case record data of the patient to the case record file for patients under care 307 on the file server 301 from the case record file for patients in local area 603 via the wide area network 100.

Detailed Description Text (75):

S1103: The doctor side accessed by the patient side opens the case record data of the patient downloaded to the case record file for patients under care 307 on the file server 301 beforehand and displays it on the clinic terminal 304.

Detailed Description Text (82):

S1110, S1111, S1112: When the order issue ends, the doctor shuts the case record of the patient and transfers it to the management center side 104 via the wide area network 100. The integrated server 501 receives the order content issued from the doctor side via the wide area network 100 and the treatment station 105 transfers it to each subsystem, for example, the nursing system 507 and the radiograph photo-taking system 505.

Detailed Description Text (87):

S1116: The image data of the patient is transferred to the integrated management server 501 from the image file 512 and to the management center 104 via the wide area network.

Detailed Description Text (91):

S1201: On the day before examination and treatment or in the morning of the day of treatment, the doctor side 102 accesses the integrated management server 601 of the management center 104 and downloads the case record data of the patient to the case record file for patients under care on the file server from the case record file for patients in local area 603 via the wide area network 100.

Detailed Description Text (93):

S1203: The doctor side accessed by the patient side opens the case record data of the patient downloaded to the case record file for patients under care 307 on the file server 301 beforehand and displays it on the clinic terminal 304.

Detailed Description Text (97):

S1207: As a result of query and reference to the image data, the doctor gives a diagnosis of an incurable disease. If this occurs, the doctor notifies the management center 104 immediately and requests an access right to the case database 606 on the integrated management server 601. The management center 104 receiving it gives the access right to the case database 606 to the doctor immediately.

Detailed Description Text (98):

S1208: The doctor obtaining the access right downloads the case database 606 from the management center side 104 via the wide area network 100 and stores it in the case record file for patients under care 307 on the file server 304.

Detailed Description Text (104):

The integrated server 501 receives the order content issued from the doctor side via the wide

area network 100 and the treatment station 105 transfers it to each subsystem, for example, the nursing system 507 and the inspecting system 504.

Detailed Description Text (108):

S1220: The examination result data of the patient is transferred to the integrated management server 501 from the inspection result file 511 and to the management center 104 via the wide area network.

Detailed Description Text (111):

FIG. 19 shows the internal structure of the case database 606 of the present invention. The database comprises a database for case retrieval 1401 and databases for various results such as inspection and radiographic image (a database for test result 1402 and a database for radiographic image 1403). Data is downloaded to the case record file for patients under care 307 on the file server 301 on the patient side 102 from the management center 104 via the wide area network 100.

Detailed Description Text (121):

By searching the case of a past patient having the similar condition of the disease to a patient of incurable disease under treatment like this, a doctor can obtain various reference data, so that he can give a precise diagnosis. In a conventional single hospital, it is difficult to acquire such an important case as a database. However, the electronic hospital of the present invention integrates and manages patient data from all medical facilities, so that it is possible. The treatment record of a patient of incurable disease newly generated is registered in the case database 606, so that it can be used for future examination and treatment and can contribute to advance of medicine.

Detailed Description Text (122):

According to the present invention, a patient can receive examination and treatment from a plurality of doctors working at arbitrary medical facilities all over the country without depending on the location where he exists, so that examination and treatment of higher quality can be executed. Since a patient can construct a hospital for himself by selecting a doctor for each clinic section, the reliability and satisfaction of the patient for examination and treatment are extremely improved. In addition, services other than examination and treatment such as issue of a prescription can be received from a facility designated by the patient side via online wide area medical information communication from the clinic, so that there is an advantage that the labor and time consumption of a patient can be reduced extremely in comparison with the conventional hospital system. Furthermore, by centrally managing treatment history data of all patients and using it for examination and treatment, it is possible to check various orderings precisely and indicate plentiful similar case data even when an incurable disease occurs.

CLAIMS:

1. A wide area medical information system, comprising:

a wide area network;

a plurality of doctor terminals connected to said wide area network;

a plurality of patient terminals connected to said wide area network;

at least one management server connected to said wide area network including an electronic case record file for storing therein at least clinic information for patients and a doctor database storing therein data for a plurality of doctors registered as members in said wide area medical information system;

means for searching for a doctor corresponding to a certain patient utilizing said doctor database on the basis of basic patient information input from one of said patient terminals including at least the certain patient's name and patient information including the condition of the certain patient;

means for requesting that the doctor found by said searching means take charge of examination and treatment of the certain patient;

means for registering, when the doctor accepts the request of said requesting means, the correspondence between the doctor and the certain patient in said electronic case record file;

means for giving the right to access the clinic information of the certain patient for which said correspondence is registered to the doctor; and

means for executing an online examination and treatment including at least queries for diagnosis via said doctor terminal and patient terminal of the doctor and the certain patient having said registered correspondence.

4. A treatment method in a wide area medical information system including a wide area network, a plurality of doctor terminals connected to said wide area network, and a plurality of patient terminals connected to said wide area network, said method comprising the steps of:

searching for a doctor corresponding to a certain patient utilizing a doctor database on the basis of basic patient information input from one of said patient terminals including at least the name of a certain patient and patient information including the condition of the certain patient;

requesting that the doctor found by said searching step take charge of examination and treatment of the certain patient;

registering, when the doctor accepts the request, the correspondence between the doctor and the certain patient in the electronic case record file;

giving the right to access the clinic information of the certain patient for which said correspondence is registered to the doctor; and

executing an online examination and treatment including at least queries for diagnosis via said doctor terminal and patient terminal of the doctor and the certain patient having said registered correspondence;

wherein said electronic case record file and doctor database are at least an electronic case record file for storing therein at least treatment information for patients and a doctor database recording therein data for a plurality of doctors registered in said wide area medical system and are installed in at least one management server connected to said wide area network.

5. A management server connected to a medical information system, comprising:

an electronic case record file storing at least clinic information for patients;

a doctor database storing data for doctors registered as members in said medical information system;

means for searching for a doctor corresponding to a certain patient, by utilizing said doctor database on the basis of basic input patient information including at least the patient's name and the condition of the certain patient;

means for requesting that the doctor takes charge of examination and treatment for the certain patient;

means for registering the correspondence between the approved doctor and the certain patient in said electronic case record file;

means for giving the right to access the clinic information of the certain patient for which said correspondence is registered to the doctor; and

means for executing an online examination and treatment by said approved doctor to the corresponding patient, including at least queries for diagnosis of the certain patient.

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<u>L19</u> L18 and server	7	<u>L19</u>
<u>L18</u> L16 and (image near database)	11	<u>L18</u>
<u>L17</u> L16 and ((client or user)near computer)	40	<u>L17</u>
<u>L16</u> (medical near facilit\$)	2573	<u>L16</u>
<u>L15</u> L14 and link\$	15	<u>L15</u>
<u>L14</u> L11 and (upgrad\$ or expansion or updat\$)	15	<u>L14</u>
<u>L13</u> (document near application) and (upgrad\$ near document)	0	<u>L13</u>
<u>L12</u> L11 and (upgrad\$ near document)	0	<u>L12</u>
<u>L11</u> (document near application) and (processing near code)	22	<u>L11</u>
<u>L10</u> L8 and (processing near link)	0	<u>L10</u>
<u>L9</u> L8 and (document near format)	0	<u>L9</u>
<u>L8</u> L7 and (processing near code)	13	<u>L8</u>
<u>L7</u> (procedure near remote) and (application near program) and document	572	<u>L7</u>
<u>L6</u> L4 and (file near sync)	4	<u>L6</u>
<u>L5</u> L4 and roaming	0	<u>L5</u>
<u>L4</u> L2 and (platform)	25	<u>L4</u>
<u>L3</u> L2 and (common near platform)	0	<u>L3</u>
<u>L2</u> L1 and (synchroniz\$ near computer)	75	<u>L2</u>

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END OF SEARCH HISTORY